Mental Health Disparities Among Caregivers: Implications for Gender and Sexual Minorities

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Alexandra Cheatham

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_____	_____	_____
Deborah Levison, Ph.D. Paper Supervisor	Date, oral presentation	Date, paper completion

_____	_____
Greta Friedemann-Sánchez, Ph. D. Committee Member	Date

Introduction

Informal caregiving in the United States is an extremely commonplace way of assisting and providing for family and friends. Informal caregivers are typically unpaid, female family members investing significant time and mental energy into caring for friends and loved ones. Yet, caregivers themselves can experience adverse mental health outcomes as a result. Lesbian, gay, bisexual, transgender, and queer (LGBTQ) caregivers are an understudied population in the caregiving literature that have unique experiences and needs. Despite the advent of marriage equality in 2015, LGBTQ populations are still facing a multitude of challenges in the United States. While couples can now legally marry and share health benefits across the country, many other protections are administered on a state by state basis. For instance, discrimination policies related to housing, employment, education, conversion therapy, and public accommodations all depend heavily on geographic location. Subsequently, these policies foster a multitude of disparities for the LGBTQ community. One such disparity, and the one of interest to this study, is the mental health disparities experienced by LGBTQ caregivers in the United States.

As the portion of the population over age 50 continues to grow, caregiving will become an increasingly relevant issue. While formal (paid) caregiving is more common in many urban areas, the majority of caregiving is done by informal (unpaid) caregivers (Friedemann-Sánchez & Griffin, 2011). Formal caregivers are typically paid individuals that are hired to perform certain caregiving tasks for an individual. They can range from adult daycare and meal services, to more complex medical care. Informal caregivers however, are typically family or friends to the care recipient, and are performing unpaid care. Caregivers are individuals who provide assistance with everyday activities for someone who cannot perform those activities themselves. This can range from household chores such as cooking and cleaning to managing medications and medical care. Caregivers, especially informal caregivers, typically perform the bulk of that care. Caregiving can span a multitude of illnesses and disabilities, including short terms disabilities such as an injury, or

disabilities that require ongoing, long term care such as dementia or Alzheimer's. One important facet of caregiving is the potential impact it can have on the mental and physical health of the caregiver. Research has shown that caregivers typically experience poorer health outcomes compared to their non-caregiving counterparts (Friedemann-Sánchez & Griffin, 2013). LGBTQ communities in particular have a rich history of inner-community caregiving and face unique challenges when providing care (Shiu et al., 2016; Coon, 2003).

The purpose of this study is to identify how the number of poor mental health days per month differs for LGBTQ caregivers as well as policy recommendations to better address community needs. Using data from the 2015 and 2016 Behavioral Risk Factor Surveillance System (BRFSS) I perform multiple OLS regression analyses as well as a Blinder-Oaxaca decomposition, situated within the Minority Stress Model, to address this question. Poor mental health days per month in this context is a subjective quality of life measure. Rather than identifying a mental health outcome (such as a diagnosis of anxiety or depression) the variable of interest in this study is the number of poor mental health days per month, which can be used to evaluate quality of life. That being said, this study draws on literature around mental health outcomes related to caregiving. In this study, non-LGBTQ caregivers are defined as caregivers who are both cisgender and heterosexual. Caregivers that identify as anything other than heterosexual AND cisgender are categorized as LGBTQ for this study. Please note that when I discuss males and females or men and women, I am referring to cisgender individuals, regardless of sexuality. As much of the literature surrounding gender differences in caregiving does not explicitly include transgender individuals I have chosen not to differentiate between trans men, women, genderqueer, or gender non-conforming individuals.

I hypothesize that identifying as LGBTQ results in a greater number of poor mental health days per month compared to non-LGBTQ caregivers. This study has the potential to improve social service and healthcare policy to better support LGBTQ caregivers and their unique needs.

Literature Review

Overview of Caregiving

Caregiving, especially informal caregiving, can be a complex and stressful experience. Caregivers often juggle work, finances, and other responsibilities of their own in addition to caring for another individual. Caregiving can take a multitude of forms, from direct caregiving activities such as managing medication, meals, and bathing, to more indirect activities such as transporting individuals to appointments, stocking supplies, or arranging other care (Friedemann-Sánchez & Griffin, 2011). There are two primary categories of caregiving tasks: direct and indirect care. Direct care can include activities such as bathing, dressing, feeding, using the restroom, and getting in and out of beds or chairs. Indirect care can include activities such as finance management, arranging deliveries, and following up on medical appointments (Schoenfelder et al., 2000). The direct and indirect caregiving dichotomy is an alternative to the prevailing dichotomy of activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (Friedemann-Sánchez, & Griffin 2013). Direct and indirect care can more accurately describe caregiving tasks for a large variety of care recipients who may not have debilitating conditions. In the absence of a formal caregiver or other hired caregiving service, informal caregivers must navigate support services for themselves and their care recipient. Some services available to caregivers include care management services, nutrition programs, adult day care, respite services, and transportation services.

While most caregivers are directly related to the care recipient, many are not. A caregiver can be a parent, child, spouse, friend, or another relative. Often, adult children may care for an elderly parent or relative (Jones, S. L., & Jones, P. K., 1994; Kim, Y., & Schulz, R., 2008), a parent may care for an ill child (Capistrant, B. D., Friedemann-Sánchez, G., Novak, L. K., 2017), or a spouse may take on the primary caregiving role for their partner (Griffin et al., 2017). However, the majority of caregivers are women who care for a relative (85%), typically either a parent (42%) or partner

(12%) (Weber-Raley & Smith, 2015). Only 15% of caregivers in the U.S. are caring for a nonrelative (Weber-Raley & Smith, 2015). It is important to recognize that caregivers do not have to be legally or biologically related to the individual being cared for. In fact, many individuals in the U.S. rely on friends or even neighbors to assist with day-to-day tasks and needs. Caregivers are often friends of the care recipient and are an important resource for those without close relatives (Muraco, A., & Fredriksen-Goldsen, K., 2011).

As an informal support structure, caregiving remains highly racialized, classed, and gendered. Women act as caregivers more often than men and typically perform more complex caretaking tasks such as bathing, dressing changes, incontinence management, finance management, and medical equipment use in addition to less complex tasks such as feeding and transportation (Navaie-Waliser, M., Spriggs, A., & Feldman, P. H., 2002). Female caregivers are more likely to experience the negative aspects of caregiving such as having less time for family members, hobbies, or vacations, experience increased physical and emotional strain, and feeling overwhelmed with responsibility (Lin et al., 2012). On the contrary, male caregivers are more likely to experience fewer of the negative aspects of caregiving and more of the positive, such as feeling good about oneself and appreciating life (Lin et al., 2012).

In addition to gender, caregiving also intersects with race and ethnicity in unique ways. On average, caregivers of color have a lower socioeconomic status, are younger, are less likely to be a spouse, and more likely to provide informal as opposed to formal support (Pinquart, M., & Sö Rensen, S., 2005). Yet, caregivers of color provide more hours of care than their white counterparts and typically have stronger beliefs about familial obligation to provide care (Pinquart, M., & Sö Rensen, S., 2005). Different racial and ethnic groups hold different cultural beliefs around caregiving and the role of the caregivers. Among Latino and Asian and Pacific Islander groups, some studies have highlighted the ways caregiving coincides with cultural expectations resulting in decreased stress and perceived burden (Aranda & Knight, 1997; Dominquez, 2004; Braun &

Browne, 1998). Other studies however, have shown that those same cultural groups experience increased burden and poor mental health due to cultural stigma around help-seeking behavior and service provision (Li, 2004). It is vital to consider these intersections of gender, race, and class when analyzing caregiving; depending on an individual's identity and circumstances they may deal with the burden of caregiving in different ways, and interventions aimed to improve caregiver outcomes may not be as effective for some populations. This is particularly true for queer caregivers of color, who in addition to discrimination on the basis of sexuality, likely also experience additional barriers based on gender, class, and race (Coon, 2003).

Caregiving and Mental Health

While there are certainly positive aspects of caregiving, the majority of the caregiving literature illustrates the negative effect caregiving can have on caregivers, especially informal caregivers (Friedemann-Sánchez & Griffin, 2011). As a result of the increased emotional and financial strain caregivers experience, they can also have poorer mental health outcomes than their non-caregiving counterparts. Caregivers may experience higher levels of anxiety and depression, engage in potentially harmful behavior such as alcohol or drug abuse, and overall experience poorer physical health than their non-caregiving counterparts (Friedemann-Sánchez & Griffin, 2011). Much of the caregiving literature focuses on the negative aspects of caregiving in order to identify possible interventions for caregivers, as caregiver health can be so negatively impacted by the strain of caregiving (Friedemann-Sánchez & Griffin 2011). Both the positive and negative aspects of caregiving have been apparent throughout the literature, and to some extent both of been used to help identify possible interventions. Yet, the focus in caregiving literature has remained on the negative aspects of caregiving due to the physical and mental health impacts on caregivers (Friedemann-Sánchez & Griffin 2011; Friedemann-Sánchez & Griffin 2013).

Several factors can further influence caregivers' mental health including income, education, social support, and caregiving burden. Caregivers who have a higher caregiving burden, such as

those who manage more difficult care tasks or a larger time commitment, generally have poorer mental health outcomes (Friedemann-Sánchez & Griffin, 2011). On average, caregivers in the United States spend 24.4 hours per week providing care, and 23% of caregivers provide more than 41 hours of care a week (Weber-Raley & Smith, 2015). Likewise, caregiver burden varies based on the need of the care recipient (Friedemann-Sánchez & Griffin, 2011). Illnesses such as dementia and cancer have a far greater effect on caregiver stress than more standard caregiving experiences such as caring for an elderly relative (Kim, Y., & Schulz, R., 2008).

The relationship between the caregiver and the care recipient is a vital factor in determining mental health. Spousal caregivers on average experience especially poor mental health outcomes when compared to their non-caregiving counterparts (Lavela, S. L., & Ather, N., 2010). Female spousal caregivers typically experience poorer mental health outcomes than their male counterparts, including elevated levels of anxiety, depression, stress, and loneliness (Lavela, S. L., & Ather, N., 2010; Godfrey, J. R., & Warshaw, G. A., 2009). Whereas other forms of caregiving are viewed as an additional burden on the caregiver, spousal caregivers are viewed as simply performing the duties of a spouse, which has especially gendered connotations for female spousal caregivers.

In addition to the relationship between caregivers and care recipients, resources are an important factor in determining caregiver mental health. Often, caregivers who have fewer social or family support resources experience worse mental health outcomes than those who do have those support structures (Griffin et al., 2017). Similarly, financial resources are a critical factor in mediating caregiver mental health. Caregivers with greater financial resources typically have more options available for care and experience less stress (Savage, S., & Bailey, S., 2004).

Some have pushed back against the literature's tendency to only highlight the negative health outcomes for caregivers. Of course, it is necessary to emphasize the positive aspects of caregiving as well as the negative, but the negative aspects are of particular interest to this study.

Brown and Brown (2014) note the widely accepted understanding that caregiving is overwhelmingly negative. However; they argue that the caregiving literature is rife with methodological problems and design limitations. While Brown and Brown bring up valid points, the fact remains that caregivers ultimately experience poorer mental health outcomes than non-caregivers, and policy interventions could address this disparity. Likewise, while studies have acknowledged Brown and Brown's points, emphasis remains on the negative aspects of caregiving and its effect on mental and physical health. It is also far more difficult to quantify the positive aspects of caregiving that Brown and Brown suggest. For the basis of this study, while I would like to acknowledge that there are positive aspects of caregiving, I have decided to focus on the negative mental health outcomes caregivers experience and possible policy interventions to address this disparity.

LGBTQ Caregiving

Caregiving in the LGBTQ community has a long and rich history which developed out of the HIV/AIDS epidemic of the late 20th century, where the stigma behind the disease and homosexuality, as well as lack of healthcare, forced LGBTQ individuals to care for one another outside of biological families (Muraco & Fredriksen-Goldsen, 2011). During this crisis the LGBTQ community was disproportionally affected, making up the majority of the 448,060 HIV/AIDS related deaths in the United States between 1981 and 2000 (Centers for Disease Control and Prevention, 2001). The severe discrimination associated with the disease and being LGBTQ resulted in a lack of healthcare and caregiving resources. Instead of relying on biological family or institutionalized support, the LGBTQ mobilized internally to care for themselves, which led to a cultural norm of providing care within the LGBTQ community (Shiu et al., 2016). Whereas hospitals were scared to interact with HIV/AIDS patients, sometimes even putting their remains in trash bags, the LGBTQ developed an intense caregiving response (Faderman, 2015). The Gay Men's Health Crisis was a major coordinator of caregiving activities, arranging for volunteers to "pay visits

to people with AIDS and hold their hand, clean their apartments, walk their dogs, shop for groceries, cut up their food and feed them, take them to doctors, read to them in hospitals" as well as establishing 24-hour hotlines to provide emotional support and accurate medical information (Faderman, 2015).

Subsequently, LGBTQ individuals typically provide more care to friends and perform more hours of care per week than heterosexual individuals (Metlife, 2010; Shiu et al., 2016). While younger LGBTQ individuals are experiencing unprecedented levels of social acceptance, LGBTQ elders are still more likely to turn to partners or chosen family as sources of care rather than biological family members due to lack of acceptance (Muraco & Fredriksen-Goldsen, 2011).

Many of the barriers faced by LGBTQ caregivers historically stemmed from lack of legal recognition of relationships. Since the passage of marriage equality in 2015, this barrier has largely been lessened, as same-sex partners have the same legal rights in marriage as their heterosexual counterparts. Other important rights gained through marriage equality include power over healthcare, legal, and financial decisions.

However, caregiving in the LGBTQ community is unique in many ways, especially in the United States. LGBTQ older adults are more likely to have experienced severe disadvantages throughout their lifetime due to discrimination and victimization and thus are more likely to experience chronic health conditions, disabilities, and depression as well as rely on non-traditional support structures (Shiu et al., 2016). Overall, LGBTQ individuals are less likely to have children than their heterosexual counterparts; children are a primary source of caregiving for many older adults, and a resource many LGBTQ individuals do not have access to. (Institute of Medicine, 2011). Subsequently, many LGBTQ individuals give and receive friend-caregiving more than their heterosexual counterparts. One study found that 21% of LGBTQ caregivers are caring for a friend, compared to 6% of heterosexual caregivers (Metlife, 2010). This level of friend-care is associated with lower caregiving demands and more positive caregiving experiences, however there is also

less social support for friend caregivers, which is associated with poorer mental health outcomes (Shiu et al., 2016).

LGBTQ caregivers themselves face additional challenges when providing care. As a group, LGBTQ individuals on average face poorer physical and mental health outcomes than their heterosexual counterparts (Jackson et al., 2016). This is often exacerbated by instances of discrimination and experiences of minority stress. Additionally, caregivers may experience increased stress when seeking support, as things like LGBTQ caregiver support groups typically only exist in larger metropolitan areas. For caregivers this can be especially stressful when navigating the multifaceted landscape of healthcare, service providers, and other systems that may not have the knowledge or competency to deal with LGBTQ clients.

Theoretical Framework

The theoretical basis for this study is grounded in the Minority Stress Model put forward by Meyer (2003). Minority stress is a concept that has developed in multiple disciplines but essentially refers to "excess stress to which individuals from stigmatized social categories are exposed to as a result of their social, often a minority, position" (Meyer, 2003). LGBTQ-specific Minority Stress Models typically include "(a) external, objective stressful events and conditions (e.g., discrimination at work); (b) expectations of such stressful events; and (c) internalization of negative societal attitudes regarding sexual minorities, as well as the perceived need to conceal one's sexual orientation" (Berghe et al., 2010). More simply, the three processes put forth by Meyer (and others) can be summarized as (1) observable, objective instances of discrimination or violence, (2) fear of and expectations of discrimination or violence, and (3) internalized homophobia or transphobia.

This model highlights that simply identifying as LGBTQ adds a level of stress to the individual, *despite* other sociodemographic characteristics such as race, income, or education. While factors such as race, income, and education have been shown to influence mental health, the idea

behind this model is that LGBTQ individuals experience poor mental health due to their experiences as LGBTQ individuals, not just due to facts such as race, income, and education. In the regression model described below, this increased level of stress would be accounted for in the LGBTQ identity variable, which is hypothesized to affect how many poor mental health days on average can be attributed to holding an LGBTQ identity. The Minority Stress Model highlights that social minorities, as a result of their marginalized identity, face increased stress simply by navigating everyday situations where discrimination may be possible. Thus, everyday situations that may not cause stress for cisgender and heterosexual caregivers put an additional strain on LGBTQ caregivers, resulting in a higher number of poor mental health days per month. LGBTQ caregivers must allocate mental and emotional energy in everyday interactions that cisgender and heterosexual caregivers simply don't have to allocate as they navigate potentially discriminatory interactions.

Whereas the linear models consider what variables are significant contributors to poor mental health (including holding an LGBTQ identity) the Blinder-Oaxaca decomposition analyzes what factors the difference in two groups can be attributed to. In this case, the decomposition analyzes how much of the difference in mental health days between cisgender/heterosexual and LGBTQ caregivers can actually be attributed to the variables in the model, and what simply can't be explained. The unexplained portion of the decomposition in this study is where I anticipate the Minority Stress Model processes would be situated. Because there are no variables for instances of discrimination or anticipation of discrimination, they would be in the unexplained portion of the decomposition rather than the portion that is explained by the independent variables.

While this framework is not exact, it does provide a way in which to analyze mental health disparities between LGBTQ and non-LGBTQ caregivers. Caregivers attempting to access support services for themselves may have difficulty accessing LGBTQ-friendly services depending on their location and the local political climate. Similarly, because LGBTQ caregivers are middlemen for care recipient services, accessing those services can add additional stress for the caregiver if service

providers are discriminatory. Regardless of whether or not service providers discriminate against LGBTQ individuals, it is the anticipation and fear of discrimination that contributes to caregiver stress. If the caregiver lives in a conservative or rural area, available services may be limited and have religious affiliations. And while that may not affect the care recipient, it could increase stress for the caregiver. Likewise, if the care recipient is also LGBTQ, the caregiver may be navigating services that are inclusive of both the caregiver and the recipient.

The goal of this study is to situate caregiver mental health disparities within this framework in order to establish whether this model proves true for LGBTQ caregivers, holding other factors constant. Specifically, I examine whether the very action of holding an LGBTQ identity as a caregiver results in greater number of poor mental health days per month, regardless of sociodemographic factors.

Data

The data used in this study is from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a nationwide survey conducted by the CDC every year. The survey asks participants about their 'health-related risk behaviors, chronic health conditions, and use of preventative services.' The BRFSS collects data at the state and local level in order to better inform health promotion activities. The BRFSS is split into three parts: the core component that all states use, the optional modules on specific topics that states can elect to use, and individual state questions. Of interest to this analysis are two optional modules, the Caregiver module which became an option in 2015, and the Sexual Orientation and Gender Identity module, which became an option in 2014. These modules are excellent resources for analyzing the mental health disparities between LGBTQ and non-LGBTQ caregivers.

The Caregiver module asks a number of questions about caregivers including frequency of caregiving, duration of caregiving, caregiving activities, the condition of the person being cared for, and their relationship to the caregiver. The Sexual Orientation and Gender Identity module asks

respondents to identify their sexual orientation (heterosexual, lesbian or gay, bisexual) as well as whether they consider themselves transgender and in what way (transgender woman, transgender man, gender nonconforming, etc.) This is an especially important question in the module, as transgender individuals are generally the most discriminated subgroup in the broader LGBTQ community and excluded from (or not recognized explicitly in) many large-scale quantitative studies about the community.

Sample

In the 2015 Behavioral Risk Factor Surveillance System eight states completed both the Sexual Orientation module and the Caregiver module. Those eight states were Hawaii, Idaho, Illinois, Indiana, Pennsylvania, Virginia, West Virginia, and Wisconsin. In 2016 four different states completed both modules: Georgia, Minnesota, Missouri, and Nevada. The data used for this analysis combines the 2015 and 2016 data for the selected twelve states to obtain a larger sample of LGBTQ caregivers that could be compared to non-LGBTQ caregivers. The total number of LGBQ (not including transgender individuals) caregivers in this sample is 510. The total number of transgender caregivers in this sample is 69. The total number of non-LGBTQ caregivers in the sample is 14,992. The final number of caregivers in the sample is 15,571. All participants in the sample are caregivers; non-caregivers were excluded as the primary research question for this study is whether identifying as an *LGBTQ* caregiver results in poorer mental health than a cisgender and heterosexual caregiver.

Variable Selection

The Behavioral Risk Factor Surveillance System provides several measures to compare mental health for caregivers. Of interest to this study is the health-related quality of life measure (HRQOL) about mental health: it asks about the number of 'poor' mental health days experienced in a single month. Respondents are asked, "Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your

mental health not good?" The response is a number of days between zero and thirty. This number constitutes the number of 'poor' mental health days that the respondent experiences per month and is the dependent variable for this study.

One advantage of this measure is that it asks about mental health broadly rather than just anxiety and depression and allows for some self-definition by participants. Respondents are able define how they view their own poor mental health days: rather than being a weakness, the subjective nature of this measure allows for an increased capacity for self-definition. Despite the subjective nature of this measure, it has been shown to have high retest reliability with little variation among population subgroups (Andresen et al., 2003). Unlike other mental health measures (such as the PHQ8 or PHQ9), HRQOL measures do not have a full, multi-category scale for analyzing number of poor mental health days. Rather, there is only one category for measuring poor mental health; at 14 poor mental health days per month individuals are designated as experiencing 'frequent mental distress' (Centers for Disease Control and Prevention, 2000). The CDC as well as studies utilizing BRFSS data have adopted the 14 day marker as a sign of frequent mental distress in populations.

Other variables of importance include age, race, education, income, health insurance status, and depression diagnoses by medical professionals. Models 2 and 4 include a state variable to control for variation in the survey states, either in the survey itself, in caregiver resources, or in LGBTQ acceptance. To understand some of the different dimensions of caregiving that could contribute to mental health disparities, the following variables from the caregiving module were included in the analysis: relationship to the care recipient, hours of care provided per week, length of time providing care (in months and years), and the illness or disability of the care recipient, as these have been shown in literature to be major contributors to poor mental health in caregivers.

Methods

To address the question posed in this paper, namely, how do the number of poor mental health days per month differs between LGBTQ and non-LGBTQ caregivers, I have used two methods. First, I have employed linear probability models to estimate the contribution of several predictor variables on the mental health of caregivers. Secondly, I have used the Blinder-Oaxaca method to decompose the differences in means between caregivers' poor mental health days. In order to best address the research question, these methods are situated with the theoretical framework of the Minority Stress Model.

Mental health in this study are based on a subjective, self-rated number of 'poor' mental health days the participant experienced in a given month, as described above. It is important to note that this is not a mental health outcome, but a subjective quality of life measure about mental health. The linear probability model used to address mental health is comprised of four categories of explanatory variables: demographic variables, health variables, caregiving variables, and identity variables. The demographic variables include standard demographic measures such as race, age, income, education, state, and employment status. These variables control for differences in the sample population that may contribute to poor mental health but that are not a direct result of a caregiving role. Rather, people may have poor mental health because they have low incomes or are unemployed.

The health variables in this model account for health insurance status, and whether the individual has ever had a diagnosis of depression. It is important to include any previous depression diagnoses to establish whether poor mental health is due to caregiving, holding an LGBTQ identity, or simply a history of poor mental health. However, the potential endogeneity of a depression diagnosis poses estimation challenges described later.

The caregiving variables in this model control for the different aspects of caregiving that could contribute to poor mental health. For example, studies have shown that caring for certain

cognitive conditions are more mentally taxing than for physical ones in addition to the hours of care per week, the length of time the individual has been providing care, and the relationship to the care recipient (Friedemann-Sánchez & Griffin, 2011). Accounting for these variables in the model allows a more precise analysis of caregiving on mental health.

Finally, the identity variables in this model control for sexual orientation and gender identity as well as sex (male or female) for cisgender individuals. While the BRFSS does separate sexual orientation and gender identity by asking if an individual identifies as transgender, the sample size for transgender individuals is not large enough to conduct a robust analysis. Although most research studies exclude transgender individuals because of this consideration, I have chosen to include transgender individuals and non-heterosexual individuals into one overarching LGBTQ category. While this does influence the results (as transgender individuals typically experience poorer mental health than their lesbian and gay counterparts), I have still chosen to include them in the sample due to their typical exclusion as well as the fact that their experiences still fit within the Minority Stress Model framework. Additionally, any policy recommendations based on this research can apply to the queer community broadly, including both cisgender and transgender individuals.

The combination of variables in this model have been selected to best address differences in mental health for LGBTQ and non-LGBTQ caregivers, controlling for demographic characteristics such as race, age, and income, health factors such as depression diagnoses, and caregiving burden. While this model does include plenty of rich information, ideally it also would have controlled for additional factors related to support services and caregiving resources, as well as whether the care recipient identified as LGBTQ. Unfortunately, the BRFSS does not provide this information.

Linear Model Specification

The primary equations of interest to this study are the linear models below with number of poor mental health days per month as the dependent variable. I have chosen to utilize a linear

model due to the continuous nature of the dependent variable. Using a linear model allows for an analysis of each explanatory variable's impact on the number of health days per month.

The model includes four main categories of explanatory variables. The first category contains the sexuality and gender variables of interest to the study. The second includes demographic characteristics that have been shown to influence mental health among different groups, including race, age, income, employment, state, and education. This category also includes a race interaction variable to identify LGBTQ individuals of color. Since LGBTQ individuals of color typically experience extremely high levels of discrimination, this variable helps to identify which members of the LGBTQ community are experiencing the poorest mental health. The third category controls for health-related variables that could influence mental health, including health insurance coverage and diagnoses of depression. Those without health insurance likely have less access to mental health services, while those who have been diagnosed with depression may already have a higher number of poor mental health days per month. Due to the possible endogeneity associated with the depression diagnosis, Model 1 and Model 2 have been run without the depression diagnosis, while Model 3 and Model 4 do include the depression diagnosis. Finally, Models 2 and 4 also include a variable to control for any possible variation among survey states. These models have been established in order to determine if mental health differences between LGBTQ and non-LGBTQ caregivers are due to holding an LGBTQ identity, or if they are due to differences in other explanatory variables associated with poor mental health.

(Model 1) $$\begin{aligned} \text{PoorMentalHealthDays} = {} & \beta_0 + \beta_1 \text{Sex} + \beta_2 \text{LGBTQ} + \beta_3 \text{Age} + \beta_4 \text{Race} + \beta_5 \text{RaceInteraction} + \beta_6 \\ & \text{Education} + \beta_7 \text{Employment} + \beta_8 \text{Income} + \beta_9 \text{InsuranceCoverage} + \beta_{10} \\ & \text{RelationshiptoRecipient} + \beta_{11} \text{CareLength} + \beta_{12} \text{CareHours} + \beta_{13} \text{RecipientDisability} + \varepsilon \end{aligned}$$

(Model 2) $$PoorMentalHealthDays = \beta_0 + \beta_1 Sex + \beta_2 LGBTQ + \beta_3 Age + \beta_4 Race + \beta_5 RaceInteraction + \beta_6 Education + \beta_7 Employment + \beta_8 Income + \beta_9 InsuranceCoverage + \beta_{10} RelationshiptoRecipient + \beta_{11} CareLength + \beta_{12} CareHours + \beta_{13} RecipientDisability + \beta_{14} State + \varepsilon$$

(Model 3) $$PoorMentalHealthDays = \beta_0 + \beta_1 Sex + \beta_2 LGBTQ + \beta_3 Age + \beta_4 Race + \beta_5 RaceInteraction + \beta_6 Education + \beta_7 Employment + \beta_8 Income + \beta_9 DepressionDiagnosis + \beta_{10} InsuranceCoverage + \beta_{11} RelationshiptoRecipient + \beta_{12} CareLength + \beta_{13} CareHours + \beta_{14} RecipientDisability + \varepsilon$$

(Model 4) $$PoorMentalHealthDays = \beta_0 + \beta_1 Sex + \beta_2 LGBTQ + \beta_3 Age + \beta_4 Race + \beta_5 RaceInteraction + \beta_6 Education + \beta_7 Employment + \beta_8 Income + \beta_9 DepressionDiagnosis + \beta_{10} InsuranceCoverage + \beta_{11} RelationshiptoRecipient + \beta_{12} CareLength + \beta_{13} CareHours + \beta_{14} RecipientDisability + \beta_{15} State + \varepsilon$$

Table 1 shows the definitions for all independent variables in the model and Table 2 reports basic descriptive statistics for the dependent and independent variables. Each explanatory variable in the model takes the form of a categorical variable. For example, rather than just an overall 'years of education' variable, in the actual analysis, education is broken down into each level of education, so results estimate the effects of earning a college degree versus a high school diploma on the number of poor mental health days.

Blinder-Oaxaca Decomposition

In addition to the linear model above, I have also chosen to utilize a Blinder-Oaxaca decomposition model. The Blinder-Oaxaca decomposition uses the same Model 2 as above (without the race interaction) but decomposes the difference in averages of mental health days into two parts, the explained and unexplained portion of the difference. The explained portion of the average difference explains what portion of the difference-in-means can be attributed to group differences

in the independent variables. For example, a portion of the difference in mental health days between LGBTQ and non-LGBTQ caregivers is likely attributable to the higher rate of depression diagnoses and lower incomes among the LGBTQ community. The unexplained portion of the difference however, is just that: unexplained. The difference is often attributed to discrimination. However, the unexplained portion of the difference can also be due to omitted variable bias in the model, so it is better to interpret the unexplained difference as a potential combination of discrimination and the influence of omitted variables.

In this model, there are several potentially omitted variables that could contribute to the difference-in-means. Most importantly, the sexual orientation of the care recipient is not included in this model, which would likely have a great effect on the number of poor mental health days per month. If a caregiver is having to navigate potentially discriminatory services for both themselves and their care recipients, there is likely increased stress on the caregiver themselves. Other useful variables would have been utilization of support services and local political climate.

Results

Descriptive Statistics

The following section gives a brief overview of selected caregiver characteristics. For a full table of descriptive statistics see Tables 2, 3, and 4. The 579 LGBTQ caregivers were predominantly white (68.9%) followed by 'other' which included multiracial and missing values (13.1%). In comparison, the 14,992 non-LGBTQ respondents were 79.9% White, followed by Black at 7.4%. Non-LGBTQ caregivers had a higher household income than non-LGBTQ caregivers. 42.1% had household incomes over $50,000 compared to 35.8% of LGBTQ caregivers. About 51.2% of non-LGBTQ caregivers were employed while 44.3% were not in the workforce and 4.5% were unemployed. Comparatively, 51.8% of LGBTQ caregivers were employed while 38.3% were not in the workforce, while 9.8% were unemployed.

Cisgender and heterosexual caregivers in the sample had an average (mean) of 4.4 poor mental health days per month. In comparison, LGBTQ caregivers had an average of 7.4 poor mental health days per month. Only 23.2% of non-LGBTQ caregivers had been diagnosed with a depressive disorder compared to 42.5% of LGBTQ caregivers. Non-LGBTQ caregivers were more likely to have some form of health insurance (92.8%) than LGBTQ caregivers (87.7%).

Non-LGBTQ caregivers were most often caring for either parents or partners (35.5% and 18.7%). Comparatively, LGBTQ caregivers were more likely to care for parents or non-relatives (32.2% and 22.3%). Both groups typically performed care for less than eight hours per week (56.8% for non-LGBTQ caregivers and 54.8% for LGBTQ caregivers), but the second most frequent hour commitment was more than 40 hours per week; 16.3% for non-LGBTQ caregivers and 16.8% for LGBTQ caregivers.

Linear Probability Models

Table 5 shows the estimates from the OLS models. Model 1 had an R^2 of 0.098, indicating that the model explains 9.8% of the variation in poor mental health days, holding all else constant. Adding state controls, Model 2 had an R^2 of 0.102, indicating that the model explains 10.2% of the variation in poor mental health days, holding all else constant. Without the state controls but with the depression diagnosis variable, Model 3 had an R^2 of 0.228, indicating that the model explains 22.8% of the variation in poor mental health days, holding all else constant. The final OLS model with all variables, Model 4 had an R^2 of 0.231, indicating that the model explains 23.1% of the variation in poor mental health days, holding all else constant.

The variation in R^2 measures and coefficients between Model 1 and 2 in comparison to Models 3 and 4 are cause for concern. This variation is likely due to simultaneous determination between the dependent variable and the diagnosis of depression variable. An individual with a previous diagnosis of depression will likely have more poor mental health days than a person who does not have a diagnosis of depression, and a person who has frequent poor mental health days is

more likely to be diagnosed with depression than an individual who does not have many poor mental health days. Likewise, concerns about income, employment, or other factors can likely influence both the number of poor mental health days as well as a diagnosis of depression. An examination of the correlation matrices between variables determined that the change in coefficients is not due to multicollinearity between the depression diagnosis variable and the other variables in the model. Therefore, the large coefficient changes between the models is likely biased by simultaneous determination and endogeneity. For this reason, I have chosen to interpret the OLS and Oaxaca results from Model 2 only, as it does not include the endogenous depression diagnosis variable. The full OLS results across all models can be found in Table 5.

Most of the results aligned with what previous studies have found, namely that identifying as a female, having less education and income, being unemployed or not in the workforce, length of caregiving, hours of care per week, and relationship to the care recipient are all significant factors in determining caregiver self-reported mental health (Lavela, S. L., & Ather, N., 2010; Godfrey, J. R., & Warshaw, G. A., 2009; Savage, S., & Bailey, S., 2004; Friedemann-Sánchez & Griffin, 2011).

The primary variable of interest to this study, namely identifying as LGBTQ, was in fact a significant factor in the number of poor mental health days a caregiver experienced per month. LGBTQ caregivers experienced an additional 2.3 poor mental health days per month when compared to cisgender and heterosexual caregivers, significant at the one percent level.

Black and Asian and Pacific Islander caregivers overall experienced better mental health in comparison to White caregivers at the one percent level. Black caregivers experienced 0.8 fewer poor mental health days than White caregivers, and Asian/Pacific Islander caregivers experienced 1.4 fewer poor mental health days than White caregivers. Yet, this was not true for LGBTQ Asian/Pacific Islander caregivers. The interaction variable between race and LGBTQ identity was significant at the five percent level across all four models for Asian and Pacific Islander LGBTQ caregivers. In order to interpret the interaction variable between LGBTQ identity and Asian and

Pacific Islanders, the coefficients of identifying as LGBTQ and identifying as an LGBTQ Asian/Pacific Islander are added together. Thus, for Asian and Pacific Islanders, the marginal effects of identifying as an LGBTQ caregiver results in 7.46 additional poor mental health days per month (2.311 + 5.144).

Identifying as female was significant at the one percent level and contributed an additional 1.1 days of poor mental health per month. Individuals with less than a high school diploma could expect 1.7 additional poor mental health days per month compared to those with a high school diploma, whereas individuals who graduated college had 0.4 fewer poor mental health days per month. Similarly, earning less than 35,000 dollars a year resulted in an additional 2.5 poor mental health days per month compared to those with household incomes over 50,000. Individuals who were unemployed vs. employed experienced an additional 3.3 poor mental health days per month, and those not in the workforce experienced an additional 2.3 poor mental health days per month.

As studies have shown, the length of caregiving, the hours of caregiving per week, and the relationship to the care recipient are all significant factors in caregiver mental health. Caregivers who have been performing care for at least one month all experience more poor mental health days compared to those that have been caring for under a month. Caregivers who have been caring for someone between six months and two years experienced the greatest effect on mental health at an additional 0.6 days of poor mental health per month, significant at the one percent level. Hours of care per week were also a significant determinant of mental health at the one percent level, with the greatest impact on caregivers who performed more than forty hours of care per week. These caregivers experienced nearly a full extra day of poor mental health per month.

The relationship between the caregiver and care recipient were significant in some cases. Mental health effects were statistically significant at the one percent level for parents, other relatives, and non-relatives. Caregivers caring for parents experienced 0.8 fewer poor mental health days than those caring for partners, while those caring for other relatives and non-relatives

experienced 1.2 and 0.7 fewer poor mental health days respectively. Caring for a sibling results in 0.6 fewer poor mental health days than caring for partners, significant at the five percent level. These results indicate that caring for a partner is the most stressful situation, followed by caring for a sibling, non-relative, parents, and finally grandparents.

The type of illness or disability of the care recipient was also insignificant, contrary to much of the literature. However, this might simply be because the majority of respondents (over 60%) either didn't know the care recipients' illness or disability, or simply chose not to respond to that question in the BRFSS. Health insurance status of the caregiver was also insignificant in the model.

State was significant in three cases. Respondents residing in Missouri, Nevada, and Pennsylvania all experienced additional days of poor mental health per month, significant at the one percent level compared to Minnesota. Respondents residing in Missouri experienced an additional 1.5 days of poor mental health per month, while respondents in Pennsylvania experienced an additional 1.6 days of poor mental health per month. In comparison, respondents in Nevada only experienced an additional 0.9 days of poor mental health per month.

Blinder-Oaxaca Decomposition

The Blinder-Oaxaca decomposition results indicate that there is a significant difference between the mental health of LGBTQ and non-LGBTQ caregivers. The overall difference between LGBTQ and non-LGBTQ caregivers is 3.4 poor mental health days per month, significant at the one percent level, with LGBTQ caregivers experiencing poorer mental health than non-LGBTQ caregivers. This difference is then broken down into explained and unexplained portions. The explained portion (explained by the independent variables in the model) is only 0.82 days per month, significant at the one percent level. The unexplained difference makes up the majority of this difference at 2.56 poor mental health days per month.

Within the explained portion of the difference-in-means, age was a significant contributor to poor mental health, significant at the one percent level. Employment status, income, and

relationship to the care recipient were all significant at the five percent level. Finally, sex for cisgender individuals and health insurance status were significant at the ten percent level.

The unexplained difference accounts for 2.56 days of the 3.4-day difference-in-means. It's important to note that this difference is *not* due solely to discrimination, but likely a combination of discrimination and variables omitted from the model. Variables that would have been helpful for this model would have been the sexual orientation or gender identity of the care recipient and social service access/utilization. However, the unexplained portion of the difference can be explained through potential discrimination and the fear of discrimination described in the Minority Stress Model.

Discussion

Using the Behavioral Risk Factor Surveillance System, my findings contribute to the literature on caregiving and especially LGBTQ caregiving. Many of my findings align with results from previous studies, with quite a few unique additions. In line with other studies, my findings show that gender, education, employment status, household income, caregiving length, weekly hours of care, and relationship to the care recipient are all significant factors in determining caregiver health (Friedemann-Sánchez & Griffin, 2011; Griffin et al., 2017, Savage and Bailey, 2004; Cannuscio et al., 2004; Jones and Jones, 1994).

Caregivers with less education and who are unemployed or out of the workforce experience additional poor mental health days per month than other caregivers. Likewise, caregivers with lower incomes also experience poorer mental health. Individuals who have been caregiving for a longer period of time and perform more hours of care per week also experience elevated levels of poor mental health. Just as in other studies, my analysis shows that caregivers caring for a partner or spouse experience poorer mental health than those caring for other individuals. Caring for non-relatives resulted in more poor mental health days than caring for parents, but fewer than caring for partners.

Gender and sexuality were important determinants in mental health for both models. Female caregivers experience poorer mental health than male caregivers in both models, although the severity of that outcome is model dependent. LGBTQ caregivers also experienced poorer mental health than cisgender and heterosexual caregivers in both models.

My findings do not all align with previous studies. Like other studies, Black caregivers report fewer poor mental health days than White caregivers (Pinquart and Rensen, 2005). Asian or Pacific Islander caregivers who identify as LGBTQ, experience far poorer mental health than White caregivers or other LGBTQ caregivers. Identifying as a queer Asian or Pacific Islander resulted in a staggering 7.46 day increase in poor mental health days each month, significant at the one percent level. The exceptionally poor outcomes for Asian and Pacific Islander LGBTQ caregivers is likely due to cultural differences in caregiving expectations as well as traditional family values.

Unlike many other studies, the disability or illness of the care recipient was not significant in any of my findings. Previous studies have shown that some care recipient illnesses, such as cancer and dementia, increase the burden on caregivers, resulting in poor mental health. However, my findings did not support this, even at the ten percent significance level. This could be due to the fact that many (nearly 64%) of respondents either didn't know the illness or disability of their care recipient or chose not to answer.

The findings from the Blinder-Oaxaca decomposition, in addition to the findings from the linear model above, support the theory behind the Minority Stress Model. Of the explained difference-in-means, only group differences in age, employment status, income, and relationship to the care recipient were significant factors in mental health. While part of the difference-in-means between LGBTQ and non-LGBTQ caregivers is likely due to omitted variable bias, the rest could be placed in the framework of Meyer's (2003) Minority Stress Model, which highlights the increased stress that minority groups face in everyday life. Not only are objective instances of discrimination important in this model, but so is the anticipation and fear of discrimination. Based on these

findings LGBTQ caregivers face increased stress resulting in poorer mental health than their cisgender and heterosexual counterparts. Instances of discrimination and anticipation of discrimination increase the number of poor mental health days per month for LGBTQ caregivers.

These results have especially serious implications for LGBTQ caregivers who are further marginalized based on income, education, or race. Unlike cisgender and heterosexual caregivers, LGBTQ caregivers face increased stress when accessing support services for either themselves or their care recipients. While the CDC and affiliated studies have used the 14-day mark as a sign of frequent mental distress, these results show that the marginal effects of identifying as a queer caregiver, especially with other marginalized identities, can quickly approach the 14-day threshold. Even without reaching the 14-day threshold, LGBTQ individuals have a much higher number of poor mental health days than their straight counterparts. Not only can this seriously affect the mental health of LGBTQ caregivers, but it can also affect their physical health. Stressors such as those described throughout this study (hours of care, anticipation of discrimination, etc.) can result in health strain for caregivers (Friedemann-Sánchez & Griffin 2013). As stress turns into strain, caregivers can experience not only poor mental health outcomes such as diagnoses of depression or anxiety, but also poor physical health outcomes (Friedemann-Sánchez & Griffin 2013). The mental health disparities between LGBTQ and non-LGBTQ caregivers must be priority policy area moving forward. Not only will LGBTQ caregivers have increased mental health service needs, the stress and strain from caregiving will also create an increasing need for physical health services In order to address these disparities policy makers must find ways to make services more accessible and address the unique needs of LGBTQ caregivers.

Limitations

Despite the promising findings from this study, there are several limitations. First, the transgender sample in this study is small. With only 69 transgender caregivers, I decided to group transgender and cisgender queer individuals together. A larger transgender sample in the study

likely would have had different results. For this reason, most studies exclude transgender individuals, but I considered it important for transgender caregivers to be included in the overall sample, even if there were not enough respondents to conduct a separate analysis.

The second limitation of this study is the small number of participating states and the geography of those states. The twelve states included in the study limit not only the overall sample size but also limit the number of LGBTQ respondents. The inclusion of California, Washington, and New York would have greatly increased the number of LGBTQ respondents due to the high number of LGBTQ individuals in those states. However, those states did not participate in both the caregiving and sexual orientation BRFSS modules, and therefore any analysis on LGBTQ caregivers could not be conducted.

Another limitation of this study is the lack of variables identifying care recipient sexual orientation or gender identity. Understandably, the CDC cannot ask individuals to reveal another person's sexual orientation or gender identity for privacy and safety reasons. However, it would have been useful in this study to know whether caregivers were navigating through homophobia and transphobia for themselves in addition to their care recipient. The addition of this variable would have made it easier to pinpoint causes of poor mental health days and likely would have been significant in the decomposition model as a major source of the difference in poor mental health days between LGBTQ and non-LGBTQ caregivers.

Finally, the largest limitation of this study is the potential simultaneous determination of number of poor mental health days and diagnoses of depression. In the OLS models I attempted to control for this by providing models with and without this variable. Likewise, in the Oaxaca-Decomposition model I chose to use a conservative model without the depression diagnosis model. A way to address the potential simultaneous determination in the decomposition model would have been to perform a two-stage least squares version of the Oaxaca-Decomposition. However, the

BRFSS does not provide an alternative variable that could be used as an instrumental variable in this process.

Policy Implications

First and foremost, the findings from this study indicate a need for further research into the experiences of LGBTQ caregivers. This study indicates that there is a major mental health disparity between LGBTQ and non-LGBTQ caregivers. Aside from some sociodemographic characteristics and dimensions of caregiving, however, this study cannot say what that disparity is attributed to. Further research is needed to identify where exactly those disparities occur (what aspects of caregiving, income, or social support) and what policy makers can do to address the unique needs of the LGBTQ community.

One dimension of caregiving that policy makers can address is recognition of nontraditional caregiving roles, especially in places of employment and healthcare. Caregivers that don't have to fight for recognition of their role and relationship to the care recipient would have an easier time accessing those services. Employment policies allowing non-relatives to perform caregiving roles without fear of being fired would likely have a positive effect on LGBTQ caregivers as they perform a disproportionately high rate of non-relative caregiving. Additionally, inclusive healthcare policies that allow for non-relatives to access healthcare information (with permission) or accompany care recipients would allow LGBTQ caregivers to perform their caregiving roles more adequately.

This study also has serious implications for LGBTQ Asian and Pacific Islander caregivers. Although some literature has suggested that Asian and Pacific Islander caregivers experience less stress from caregiving (Aranda & Knight, 1997; Dominquez, 2004; Braun & Browne, 1998), others have highlighted that Asian and Pacific Islanders are less likely to access support services due to a lack of knowledge and stigma around help-seeking (Li, 2004). The extreme mental health disparities experienced by LGBTQ Asian and Pacific Islander caregivers in this study indicates that

this is an underserved population when it comes to receiving caregiver support. Policy makers should dedicate special attention to address disparities in this population.

Overall, policy makers can work to create more LGBTQ-inclusive caregiving support services. Caregiving support groups and programs aimed specifically at LGBTQ caregivers would likely alleviate some of the mental health burdens and allow caregivers to create a sense of support and community in a safe environment.

Conclusion

This study investigates the mental health disparities between LGBTQ and non-LGBTQ caregivers using regression analysis and Blinder-Oaxaca decomposition. My findings indicate that identifying as an LGBTQ caregiver contributes to poor mental health when compared to heterosexual caregivers. When the difference-in-means of poor mental health between LGBTQ and non-LGBTQ caregivers is decomposed, we can see that the mental health disparity between the two groups is not due just to sociodemographic characteristics or dimensions of caregiving. Rather, a large portion of the difference-in-means is unexplained, indicating that there is a greater need for research about this community. The CDC has established 14 poor mental health days per month as the threshold for frequent mental distress. Through this analysis, it is apparent that while LGBTQ caregivers do not meet the frequent mental distress threshold alone, that threshold approaches quickly when LGBTQ identity intersects with other characteristics such as race, income, and employment status. However, policy makers can begin to support LGBTQ caregivers by creating more inclusive employment and healthcare policies, as well as LGBTQ-specific support services.

Table 1: Variable Definitions

Variable	Definition	Question in BRFSS (if asked)
Poor Mental Health Days	Dependent Variable. Number of poor mental health days in the last 30 days, answer is between 0 and 30	Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
Sex	Sex (Male or Female) of cisgender individuals	Indicate sex of respondent.
LGBTQ	Dummy variable for LGBTQ individuals. Any identity that is lesbian, gay, bisexual, transgender, or queer, is included in this variable	Do you consider yourself to be: Cisgender and heterosexual, Lesbian or Gay, Bisexual, Other, Don't know/Not Sure Do you consider yourself to be transgender?
Age	Age brackets in five year increments between 18 and 80+	-
Race	Race of respondent	Which one or more of the following would you say is your race?
Race Interaction	Interaction variable between racial identity and LGBTQ identity	-
Education	Education of respondent, values include less than high school, graduated high school, some college, and graduated college	What is the highest grade or year of school you completed?
Employment	Variable indicating whether the respondent is employed, unemployed, or not in the workforce	Are you currently…? Employed for wages, Self-employed, Out of work for 1 year or more, Out of work for less than 1 year, A homemaker, A student, Retired, Unable to work
Income	Household income bracket of respondent	Is your annual household income from all sources:
Depression Diagnosis	Dummy variable indicating whether a medical professional has every diagnosed with respondent with depression	Has a doctor, nurse, or other health professional ever told you that you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?
Insurance Coverage	Variable indicating whether or not the respondent has health insurance (including Medicare/Medicaid)	Do you have any kind of healthcare coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare, or Indian Health Service?
Relationship To Recipient	Indicates the care recipient's relationship to the caregiver	What is his/her relationship to you? For example is he/she your (mother/daughter or father/son)?
Care Length	Length of time the caregiver has been caring for the care recipient	For how long have you provided care for that person? Would you say…
Care Hours	Hours of care provided per week	n an average week, how many hours do you provide care or assistance? Would you say…
Recipient Disability	Disability or illness of care recipient	What is the main health problem, long-term illness, or disability that the person you care for has?
State	Respondent's state of residence	State FIPS Code

Table 2: Caregiver Descriptive Statistics

	Overall Caregivers		Heterosexual Caregivers		LGBTQ Caregivers	
	N	Percent	N	Percent	N	Percent
Male	5,840	37.67	5,626	37.53	214	42.04
Female	9,661	62.33	9,366	62.47	295	57.96
Heterosexual	14,992	96.28				
LGBTQ	579	3.72				
Age						
18 to 24	662	4.25	581	3.88	81	13.99
25 to 29	521	3.35	471	3.14	50	8.64
30 to 34	687	4.41	644	4.3	43	7.43
35 to 39	754	4.84	721	4.81	33	5.7
40 to 44	961	6.17	931	6.21	30	5.18
45 to 49	1,238	7.95	1,184	7.9	54	9.33
50 to 54	1,756	11.28	1,692	11.29	64	11.05
55 to 59	2,106	13.53	2,042	13.62	64	11.05
60 to 64	2,165	13.9	2,104	14.03	61	10.54
65 to 69	1,799	11.55	1,767	11.79	32	5.53
70 to 74	1,194	7.67	1,167	7.78	27	4.66
75 to 79	782	5.02	767	5.12	15	2.59
80 or older	799	5.13	778	5.19	21	3.63
Don't know/Refused/Missing	147	0.94	143	0.95	4	0.69
Race						
White	12,376	79.48	11,977	79.89	399	68.91
Black	1,162	7.46	1,106	7.38	56	9.67
Asian & Pacific Islander	512	3.29	493	3.29	19	3.28
Hispanic/Latino	383	2.46	354	2.36	29	5.01
Other (including missing)	1,138	7.31	1,062	7.08	76	13.13
Education						
Less than HS	841	5.4	804	5.36	37	6.39
Graduated HS	4,317	27.72	4,169	27.81	148	25.56
Some college	4,746	30.48	4,574	30.51	172	29.71
Graduated college	5,633	36.18	5,412	36.1	221	38.17
Don't know/not sure/missing	34	0.22	33	0.22	1	0.17
Employment Status						
Employed	7,978	51.24	7,678	51.21	300	51.81
Unemployed	733	4.71	676	4.51	57	9.84
Not in Workforce	6,860	44.06	6,638	44.28	222	38.34
Household Income						
Missing/Not Sure/Don't Know	1,950	12.52	1,885	12.57	65	11.23
Less than 35k	4,924	31.62	4,690	31.28	234	40.41
35,000-50,000	2,175	13.97	2,102	14.02	73	12.61
More than 50,000	6,522	41.89	6,315	42.12	207	35.75
Depression Diagnosis						
No	11,855	76.14	11,522	76.85	333	57.51
Yes	3,716	23.86	3,470	23.15	246	42.49
Health Insurance Status						
Uninsured	1,147	7.37	1,076	7.18	71	12.26
Insured	14,424	92.63	13,916	92.82	508	87.74

	Overall Caregivers		Heterosexual Caregivers		LGBTQ Caregivers	
	N	Percent	N	Percent	N	Percent
Relationship to Care Recipient						
Partner	2,845	18.43	2,782	18.72	63	10.98
Parents (including in laws)	5,459	35.36	5,274	35.38	185	32.23
Sibling (including in laws	1,252	8.11	1,202	8.09	50	8.71
Child	1,488	9.64	1,445	9.72	43	7.49
Grandchild	135	0.87	133	0.89	2	0.35
Grandparents	651	4.22	598	4.02	53	9.23
Other relative	990	6.41	946	6.36	44	7.67
non-relative	2,489	16.12	2,358	15.86	131	22.82
missing/not sure	130	0.84	127	0.85	3	0.52
Length of Caregiving						
Less than 30 days	3,160	20.29	3,039	20.27	121	20.9
1 month to 6 months	1,840	11.82	1,760	11.74	80	13.82
6 months to 2 years	2,704	17.37	2,613	17.43	91	15.72
2 years to less than five years	3,078	19.77	2,958	19.73	120	20.73
More than 5 years	4,421	28.39	4,267	28.46	154	26.6
Don't know/missing/refused	368	2.36	355	2.37	13	2.25
Weekly Care Hours						
Up to 8 hours/week	8,830	56.71	8,512	56.78	318	54.92
9 to 19 hours/week	1,825	11.72	1,752	11.69	73	12.61
20 to 39 hours/week	1,393	8.95	1,337	8.92	56	9.67
>40 hours/week	2,543	16.33	2,446	16.32	97	16.75
Missing/not sure/refused	980	6.29	945	6.3	35	6.04
Care Recipient Disability						
Arthritis/Rheumatism	226	1.46	218	1.47	8	1.39
Asthma	32	0.21	30	0.20	2	0.35
Cancer	489	3.17	469	3.16	20	3.48
Chronic respiratory conditions such as	225	1.46	218	1.47	7	1.22
Dementia or other cognitive impairment	513	3.32	490	3.30	23	4.01
Developmental disabilities such as autism	256	1.66	249	1.68	7	1.22
Diabetes	293	1.90	280	1.88	13	2.26
Heart disease, hypertension, stroke	441	2.86	422	2.84	19	3.31
HIV	17	0.11	17	0.11	0	0
Mental illnesses such as anxiety, depression	268	1.74	251	1.69	17	2.96
Substance abuse	27	0.17	26	0.17	1	0.17
Injuries, including broken bones	840	5.44	819	5.51	21	3.66
Old age	586	3.80	565	3.80	21	3.66
Other	1423	9.22	1361	9.16	62	10.8
Missing/Not sure	9801	63.49	9448	63.57	353	61.5
State						
Georgia	990	6.36	943	6.29	47	8.12
Hawaii	1,179	7.57	1,114	7.43	65	11.23
Idaho	1,120	7.19	1,095	7.3	25	4.32
Illinois	866	5.56	839	5.6	27	4.66
Indiana	1,214	7.8	1,176	7.84	38	6.56

	Overall Caregivers		Heterosexual Caregivers		LGBTQ Caregivers	
	N	Percent	N	Percent	N	Percent
Minnesota	3,265	20.97	3,145	20.98	120	20.73
Missouri	1,166	7.49	1,139	7.6	27	4.66
Nevada	708	4.55	667	4.45	41	7.08
Pennsylvania	992	6.37	942	6.28	50	8.64
Virginia	1,722	11.06	1,665	11.11	57	9.84
West Virginia	1,341	8.61	1,293	8.62	48	8.29
Wisconsin	1,008	6.47	974	6.5	34	5.87

Table 4: Mental Health Days Summary Statistics

	Obs.	Mean	Std. Dev.
Overall	15,379	4.462709	8.634089
Cisgender and heterosexual	14,809	4.351003	8.542784
LGBTQ	570	7.364912	10.33108

Table 5: OLS Estimates

VARIABLES		Model 1	Model 2	Model 3	Model 4
Female		1.105***	1.126***	0.542***	0.566***
		(0.141)	(0.141)	(0.131)	(0.131)
LGBTQ		2.353***	2.311***	0.897**	0.859**
		(0.449)	(0.449)	(0.416)	(0.416)
Age					
	18 to 24		Reference Category		
	25 to 29	0.540	0.554	0.0912	0.0882
		(0.497)	(0.496)	(0.460)	(0.459)
	30 to 34	0.0521	0.0642	-0.276	-0.274
		(0.466)	(0.465)	(0.431)	(0.431)
	35 to 39	0.0646	0.0538	0.0318	0.00101
		(0.461)	(0.460)	(0.426)	(0.426)
	40 to 44	0.366	0.372	0.0105	0.00783
		(0.444)	(0.443)	(0.411)	(0.410)
	45 to 49	-0.135	-0.135	-0.216	-0.225
		(0.429)	(0.429)	(0.397)	(0.397)
	50 to 54	-0.982**	-0.954**	-1.017***	-1.006***
		(0.411)	(0.411)	(0.381)	(0.380)
	55 to 59	-1.099***	-1.061***	-1.016***	-0.992***
		(0.405)	(0.404)	(0.374)	(0.374)
	60 to 64	-2.252***	-2.215***	-2.042***	-2.011***
		(0.406)	(0.406)	(0.376)	(0.376)
	65 to 69	-3.947***	-3.889***	-2.934***	-2.889***
		(0.422)	(0.422)	(0.390)	(0.391)
	70 to 74	-4.792***	-4.716***	-3.258***	-3.189***
		(0.450)	(0.450)	(0.417)	(0.417)
	75 to 79	-5.387***	-5.340***	-3.598***	-3.559***
		(0.488)	(0.488)	(0.453)	(0.453)
	80 or Older	-5.757***	-5.685***	-3.696***	-3.631***
		(0.491)	(0.491)	(0.456)	(0.456)
	Don't Know/Refused/Missing	-2.805***	-2.761***	-1.674**	-1.631**
		(0.794)	(0.793)	(0.735)	(0.734)
Race					
	White		Reference Category		
	Black	-0.805***	-0.735***	-0.0906	-0.0299
		(0.268)	(0.277)	(0.248)	(0.256)
	Asian & Pacific Islander	-1.350***	-0.923**	-0.325	-0.0706
		(0.383)	(0.441)	(0.355)	(0.408)
	Hispanic/Latino	-0.588	-0.498	-0.0687	-0.0155
		(0.455)	(0.457)	(0.421)	(0.423)
	Other (including missing)	0.279	0.507*	0.535**	0.673**
		(0.271)	(0.293)	(0.251)	(0.271)
Race & LGBTQ Interaction Variable					

	Model 1	Model 2	Model 3	Model 4
White & LGBTQ		Reference Category		
Black & LGBTQ	0.450	0.561	1.045	1.122
	(1.291)	(1.289)	(1.194)	(1.193)
Asian and Pacific Islander & LGBTQ	5.089**	5.144**	5.091**	5.118**
	(2.435)	(2.431)	(2.253)	(2.250)
Hispanic/Latino & LGBTQ	-0.719	-0.726	-0.266	-0.328
	(1.787)	(1.784)	(1.653)	(1.651)
Other & LGBTQ	0.360	0.396	0.381	0.397
	(1.162)	(1.160)	(1.075)	(1.074)
Education				
Less than High School	1.694***	1.708***	1.061***	1.077***
	(0.321)	(0.321)	(0.297)	(0.297)
Graduated High School		Reference Category		
Some College	0.186	0.246	-0.0653	-0.0123
	(0.178)	(0.178)	(0.165)	(0.165)
Graduated College	-0.474***	-0.386**	-0.607***	-0.536***
	(0.182)	(0.182)	(0.168)	(0.169)
Don't Know/Not Sure/Missing	-2.291	-2.033	-1.364	-1.151
	(1.487)	(1.486)	(1.376)	(1.375)
Employment Status				
Employed		Reference Category		
Unemployed	3.293***	3.257***	2.276***	2.235***
	(0.332)	(0.332)	(0.308)	(0.308)
Not in Workforce	2.327***	2.304***	1.295***	1.271***
	(0.169)	(0.169)	(0.157)	(0.158)
Household Income				
Missing/Not Sure/Don't Know	1.235***	1.117***	0.979***	0.871***
	(0.230)	(0.231)	(0.213)	(0.214)
Less than 35k	2.562***	2.537***	1.582***	1.570***
	(0.181)	(0.181)	(0.169)	(0.169)
35,000-50,000	0.726***	0.697***	0.434**	0.411**
	(0.212)	(0.211)	(0.196)	(0.196)
More than 50,000		Reference Category		
Health Insurance Status				
Insured		Reference Category		
Uninsured	0.0782	0.0925	0.227	0.259
	(0.271)	(0.272)	(0.251)	(0.252)
Care Recipient				
Partner		Reference Category		
Parents (including in laws)	-0.790***	-0.826***	-0.565***	-0.595***
	(0.213)	(0.213)	(0.197)	(0.197)
Sibling (including in laws	-0.587**	-0.638**	-0.471*	-0.518*
	(0.291)	(0.290)	(0.269)	(0.269)
Child	-0.226	-0.226	-0.234	-0.213
	(0.280)	(0.279)	(0.259)	(0.259)

	Model 1	Model 2	Model 3	Model 4
Grandchild	-0.859	-0.862	-0.893	-0.893
	(0.732)	(0.731)	(0.678)	(0.677)
Grandparents	-1.143***	-1.203***	-0.833**	-0.884**
	(0.413)	(0.413)	(0.382)	(0.382)
Other relative	-1.137***	-1.196***	-0.776***	-0.836***
	(0.318)	(0.318)	(0.294)	(0.294)
Non-relative	-0.692***	-0.708***	-0.669***	-0.686***
	(0.240)	(0.240)	(0.222)	(0.222)
Missing/not sure	-1.344*	-1.355*	-0.420	-0.467
	(0.769)	(0.772)	(0.712)	(0.714)
Caregiving Length				
Less than 3 Months		Reference Category		
1 month to 6 months	0.449*	0.379	0.491**	0.436*
	(0.245)	(0.245)	(0.227)	(0.227)
6 months to 2 years	0.700***	0.612***	0.601***	0.532***
	(0.222)	(0.222)	(0.205)	(0.205)
2 years to less than five years	0.537**	0.460**	0.404**	0.350*
	(0.216)	(0.216)	(0.200)	(0.200)
More than 5 years	0.599***	0.532***	0.524***	0.482**
	(0.205)	(0.205)	(0.190)	(0.190)
Don't know/missing/refused	0.764	0.744	0.800	0.787
	(0.593)	(0.592)	(0.548)	(0.548)
Weekly Hours of Care				
Up to 8 Hours		Reference Category		
9 to 19 hours/week	0.719***	0.693***	0.523***	0.491**
	(0.216)	(0.216)	(0.200)	(0.200)
20 to 39 hours/week	0.699***	0.677***	0.784***	0.761***
	(0.244)	(0.244)	(0.226)	(0.225)
>40 hours/week	1.052***	1.010***	0.951***	0.898***
	(0.202)	(0.202)	(0.187)	(0.187)
Missing/not sure/refused	0.743**	0.786**	0.604**	0.624**
	(0.316)	(0.317)	(0.293)	(0.293)
Care Recipient Disability/Illness				
Arthritis/Rheumatism		Reference Category		
Asthma	-2.170	-1.950	-0.595	-0.456
	(1.552)	(1.550)	(1.436)	(1.434)
Cancer	-0.679	-0.617	-0.102	-0.0688
	(0.668)	(0.667)	(0.618)	(0.618)
Chronic respiratory conditions such as emphysema or COPD	0.352	0.380	0.632	0.646
	(0.781)	(0.779)	(0.722)	(0.721)
Dementia or other cognitive impairment disorders	-0.870	-0.812	-0.588	-0.545
	(0.661)	(0.660)	(0.612)	(0.611)
Developmental disabilities such as autism, down's, and spina bifida	-0.908	-0.756	-0.257	-0.152
	(0.767)	(0.766)	(0.709)	(0.709)
Diabetes	-1.169	-1.140	-0.710	-0.706

	Model 1	Model 2	Model 3	Model 4
	(0.731)	(0.730)	(0.676)	(0.675)
Heart disease, hypertension, stroke	-0.535	-0.541	-0.208	-0.206
	(0.676)	(0.675)	(0.626)	(0.625)
HIV	1.319	1.626	0.279	0.531
	(2.066)	(2.063)	(1.911)	(1.909)
Mental illnesses such as anxiety, depression, or schizophr..	0.727	0.877	0.951	1.024
	(0.752)	(0.751)	(0.696)	(0.695)
Substance abuse	1.675	1.777	1.513	1.522
	(1.672)	(1.670)	(1.547)	(1.546)
Injuries, including broken bones	-0.207	-0.669	0.0237	-0.246
	(0.620)	(0.627)	(0.574)	(0.580)
Old age	-1.007	-0.655	-0.609	-0.425
	(0.649)	(0.652)	(0.600)	(0.604)
Other	-1.265**	-0.902	-0.661	-0.458
	(0.594)	(0.598)	(0.550)	(0.553)
Missing/Not sure	-0.566	-0.364	-0.0716	0.173
	(0.558)	(0.731)	(0.516)	(0.677)
Diagnosed with Depression			7.650***	7.626***
			(0.152)	(0.152)
State				
Georgia		-0.153		-0.0435
		(0.315)		(0.291)
Hawaii		-0.284		-0.239
		(0.572)		(0.530)
Idaho		-0.187		-0.437
		(0.550)		(0.509)
Illinois		0.223		0.0877
		(0.565)		(0.523)
Indiana		0.280		0.100
		(0.544)		(0.503)
Minnesota		Reference Category		
Missouri		1.494***		0.900***
		(0.323)		(0.300)
Nevada		0.947***		1.120***
		(0.352)		(0.326)
Pennsylvania		1.594***		1.085**
		(0.556)		(0.515)
Virginia		-0.260		-0.356
		(0.529)		(0.489)
West Virginia		0.615		0.659
		(0.540)		(0.499)
Wisconsin		0.418		0.106
		(0.554)		(0.512)
Constant	3.875***	3.416***	2.451***	2.118***
	(0.711)	(0.715)	(0.658)	(0.663)
Observations	15,051	15,051	15,051	15,051
R-squared	0.098	0.102	0.228	0.231

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6: Blinder-Oaxaca Decomposition

	(1)
VARIABLES	**Blinder-Oaxaca Decomposition**
group_1 (cisgender and heterosexual)	4.309***
	(0.0704)
group_2 (LGBTQ)	7.687***
	(0.475)
difference	-3.378***
	(0.480)
explained	-0.820***
	(0.130)
unexplained	-2.558***
	(0.453)

	(2)	(3)
	Explained	**Unexplained**
Gender (Cis)	0.0476*	-0.198
	(0.0278)	(0.531)
Age	-0.954***	1.543*
	(0.0973)	(0.900)
Race	-0.00480	-0.0815
	(0.0203)	(0.662)
Education	0.0397	-1.932
	(0.0252)	(1.623)
Employment Status	0.0948**	0.227
	(0.0429)	(0.963)
Income	-0.0759**	1.546*
	(0.0357)	(0.870)
Health Insurance Status	-0.0353*	0.169
	(0.0187)	(1.413)
Care Recipient	0.0478**	-0.513
	(0.0189)	(0.732)
Length of Caregiving	0.0139	-1.484
	(0.0125)	(0.959)
Weekly Care Hours	0.00609	-1.050
	(0.0201)	(0.766)
Care Recipient Disability	-0.00503	1.969
	(0.00575)	(1.538)
State	0.00521	-1.627
	(0.00991)	(0.995)
Constant		-1.127
		(3.594)
Observations	15,051	15,051

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, *p<0.1

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